

## I. REMARKS

### Preliminary Remarks:

Claims 1 to 17 are pending. No claims are amended, withdrawn, added, or canceled as a result of this response.

This response is filed within the shortened statutory period for response, no fee due. The applicants respectfully request reconsideration and allowance of this application.

### Patentability Remarks:

#### *Rejections under 35 U.S.C. §112 –*

Claim 12 was rejected under 35 U.S.C. §112, first paragraph, as allegedly being based on disclosure which is not enabling. The applicants respectfully traverse based on the succeeding remarks.

As observed by the examiner, the polymerization process used in Example 9 is not the same polymerization process as claimed by the present claim 12. In fact, as noted in the specification as filed (the second paragraph of page 5 to line 7 of page 8) the presently claimed ECTFE compositions can be prepared in different ways depending on the desired total amount of ethylene in the composition, *i.e.*, higher than 5% up to 10% or lower than 5%.

The process used in Example 9 is a polymerization method alternative to that presently claimed by claim 12, as stated on page 8, lines 4 to 7, suitable to obtain ECTFE compositions containing in total less than 5% of ethylene (see page 7, last line to page 8, line 8). To this end, the applicants note that the polymer of comparative Example 10 is comparative in that it is prepared by using the polymerization method of the prior art which however is not suitable to obtain ECTFE compositions having a second melting temperature higher than 185°C, when the total amount of ethylene is than 5%.

The applicants respectfully submit that claim 12 is fully enabled by the filed disclosure and respectfully request withdrawal of the rejection under 35 U.S.C. §112, first paragraph.

*Rejection under 35 U.S.C. §102 –*

Claims 1 and 13 were rejected under 35 U.S.C. §102(b) as being anticipated by Abusleme *et al.* (U.S. Pat. No. 6,107,393) or Zolotnitsky *et al.* (U.S. Pub. No. 2001/0003124). The applicants respectfully traverse in view of the succeeding remarks.

Claim 1 is directed to a E/CTFE polymeric composition comprising polymers of ethylene (E) and chlorotrifluoroethylene (CTFE) having an ethylene content ranging from 0.5% to 20% by moles, in which the total amount of ethylene in the composition ranges from 0.5% to 10% by moles and from 90% to 99.5% CTFE while showing a second melting temperature higher than 185°C.

This E/CTFE polymeric composition has the same good electrical properties of PCTFE (homopolymer of CTFE) while avoiding the brittle behavior of PCTFE (see page 2 and Example 4 in comparison with comparative Example 5 in the specification as filed). The claimed composition containing E and CTFE unexpectedly shows such electrical insulation properties, *i.e.*, tan $\delta$  values, more similar to the electrical behavior of PCTFE which does not contain ethylene, with respect to the electrical behavior of E/CTFE copolymer such as the commercial Halar 500<sup>®</sup> (see the tan $\delta$  values in Table 5, page 29 in the specification as filed).

Abusleme *et al.* disclose a polymer of E, CTFE and an hydrogenated monomer (c) wherein the lower amount of ethylene is 10% by moles. This polymer is in compositions comprising other components such as hydrogenated plasticizers because the hydrogenated monomer (c) improves the affinity with hydrogenated plasticizers. Zolotnitsky *et al.* disclose the same terpolymer E/CTFE/hydrogenated monomer of Abusleme *et al.* and the specific composition thereof containing plasticizers and flame retardant having low smoke release.

Abusleme *et al.* do not anticipate the present E/CTFE composition as claimed in because the compositions of Abusleme *et al.* containing a terpolymer E/CTFE/hydrogenated monomer is not a composition of polymers of ethylene (E) and chlorotrifluoroethylene (CTFE) having a content of ethylene from 0.5% to 20% by moles such that the total amount of ethylene is lower than 10%. Even in the presence of an optional hydrogenated monomers such as that disclosed by Abusleme *et al.*, the

present E/CTFE composition is not anticipated by Abusleme *et al.*, because Abusleme *et al.* do not specifically disclose a composition of ECTFE polymers having a content of ethylene from 0.5% to 20% by moles such that the total amount of ethylene is lower than 10% - as claimed.

The same is true with respect to Zolotnitsky *et al.* because Zolotnitsky *et al.* disclose the composition of Abusleme *et al.* in an admixture with fire retardants. As already stated the composition of E/CTFE polymers containing in total an amount of ethylene lower than 10% allows one to solve the technical problem of finding a polymer showing the same good electrical properties of the homopolymer of CTFE (PCTFE) while avoiding the brittle behavior of PCTFE (see page 2, lines 11 to 18 of the specification as filed).

Abusleme *et al.* do not teach obtaining a polymer having the same electrical properties of the homopolymer PCTFE while showing no brittle behavior because the technical problem of Abusleme *et al.* is to improve the affinity with hydrogenated plasticizer of polymers formed by E and CTFE. In contrast, the technical problem of the present invention was not to improve the second melting temperature (TmII) of ECTFE polymers as stated by the examiner on page 3 of the official action, but to obtain a polymer showing the same good electrical properties of PCTFE while avoiding the brittle behavior of PCTFE.

Indeed, a higher TmII does not necessarily allow one to attain improved mechanical properties in that the homopolymer PCTFE has a TmII about 210°C but shows a brittle behavior. This behavior is also supported by Examples 4 and 5 (comparative) wherein a PCTFE having a TmII of 213.3°C is demonstrated to show a brittle behavior with respect to the composition of E/CTFE containing in total 5.7% ethylene and having a lower TmII of 205.9°C (Table 1).

Furthermore, the examiner is of the opinion that since the polymer E/CTFE/hydrogenated monomers of Abusleme *et al.* of Table 1 which contains 40% of E shows a second melting point of 190°C, a temperature higher than 180°C is inherent to ECTFE polymers having lower amount of ethylene.

The applicants respectfully submit that the examiner's position is untenable since the applicants have already demonstrated in the present specification that a composition of ECTFE polymers containing ethylene in amounts from 0.5% to 20% by moles resulting in a total amount of ethylene of 5.7% (see Example 4) shows a higher second melting temperature (205.9°C) with respect to the second melting temperature (178.9°C) of a sole ECTFE polymer containing substantially the same amount of ethylene of 5.1% (see comparative Example 10), in absence of any third comonomer (see, page 7, lines 9 to 13 of the specification as filed).

The lower TmII of a EGTFE polymer according to the prior art with respect to the present ECTFE compositions, clearly shows that the examiner position, namely that by reducing the amount of ethylene one of ordinary skill in the art would expect a higher second melting temperature, is untenable since the total amount of ethylene is similar in both cases. In other words, the presently claimed compositions of are not anticipated by Abusleme *et al.* or Zolotnitsky *et al.* (which is directed to the composition of Abusleme in admixture with fire retardants) and the applicants respectfully request withdrawal of this rejection.

*Rejections under 35 U.S.C. §103 –*

Claims 2, 3, and 14 to 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Abusleme *et al.* and Zolotnitsky *et al.* Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Abusleme *et al.* or Zolotnitsky *et al.* in combination with The Encyclopedia of Polymer Science and Engineering Additives. Finally, claims 5 to 11 and 16 to 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Abusleme *et al.* or Zolotnitsky *et al.* in combination with The Encyclopedia of Polymer Science and Engineering Additives and Perelman (U.S. Pat. No. 4,304,713) or Buckmaster *et al.* (U.S. Pat. No. 5,688,457). The applicants respectfully traverse in view of the succeeding remarks.

At best, the combination of Abusleme *et al.* and Zolotnitsky *et al.* teach one of ordinary skill in the art the use of a terpolymer E/CTFE/hydrogenated monomer in admixture with other components for forming cable compositions. The references do

not teach or suggest using a composition of ECTFE polymers having different molar % of ethylene (0.5% to 20%) while resulting in a total amount of ethylene lower than 10%.

An unexpected feature of the claimed invention is that the polymeric composition in the presence of nucleating agent such as PTFE is foamable during extrusion without using any foaming agent or blowing gases, these agents are generally used in the prior art in the presence of nucleating agents to create voids.

Perelman disclose a foamable composition of a meltable perfluorocarbon not encompassing ECTFE polymers and PTFE nucleating agent also containing a blowing agent, which is not required by the present foamable composition. Buckmaster *et al.* disclose an extrusion process of thermoprocessable polymer incorporating a nucleating agent for improve the extrusion rate. which produce unfoamed extrudate (see column 2, line 4) – indeed no blowing agent is employed.

Thus neither Perelman nor Buckmaster *et al.* add anything to the teachings of Abusleme *et al.* and Zolotnitsky *et al.* which would lead one of ordinary skill in the art to the foamable compositions comprising the polymeric composition as claimed.

The examiner's position is that PTFE is a known blowing agent. The Encyclopedia of Polymer Science and Engineering Additives defines foaming (blowing) agents at Section 2.2. as chemical /physical agents which generate gases when decomposing during processing. In particular the foaming agent are:

- volatile liquids or compressed gases that change state during processing;
- agents that decompose thermally during processing to liberate gases.

PTFE cannot be considered to be included by the above definition since it is well known that PTFE does not decompose forming gases during the processing at the temperatures of ECTFE processing.

As far to the voids %, the applicants note that in Buckmaster *et al.*, the maximum void % achieved in the presence of only PTFE (without using any blowing agents) is lower than 5% (see column 8, lines 5 to 9) and it is considered by Buckmaster *et al.* as unfoamed article (see column 2, lines 1 to 5). In contrast, the void % obtained in the same situation of Buckmaster *et al.*, *i.e.*, in the presence of PTFE without using any blowing agent, but using the present polymeric composition of ECTFE, is about 20% to

30%, *i.e.*, 4 to 6 times higher (see Examples 15 and 16 and Table 4). These improved results are surprising and unexpected in view of the teachings of the prior art.

In conclusion, the applicants respectfully submit that claims 2, 3, and 14 to 15 are not unpatentable over Abusleme *et al.* and Zolotnitsky *et al.*; claim 4 is not unpatentable over Abusleme *et al.* or Zolotnitsky *et al.* in combination with The Encyclopedia of Polymer Science and Engineering Additives; and claims 5 to 11 and 16 to 17 are not unpatentable over Abusleme *et al.* or Zolotnitsky *et al.* in combination with The Encyclopedia of Polymer Science and Engineering Additives and Perelman or Buckmaster *et al.* Therefore, the applicants respectfully request withdrawal of these rejections.

## II. CONCLUSION

In view of the remarks above, the applicants respectfully submit that this application is in condition for allowance and request favorable action thereon.

In the event this response is not timely filed, the applicants hereby petition for an appropriate extension of time. The fee for this extension, along with any other additional fees which may be required with respect to this response, may be charged to Deposit Account No. 01-2300, referencing Attorney Docket No. 108910-00128.

Respectfully submitted,

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